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AVIATION AND AIRCRAFT JOURNAL

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Vol. XI

OCTOBER 31, 1931

No. 15

Aviation in China

THE article on aviation in China which is contributed to this issue by an officer of the Chinese air service will perhaps come as a revelation to many of our readers. The steady, though quiet progress the Chinese Republic has for some time been making in aeronautics is little known in this country, so that a detailed record of the aeronautical activities may be the cause of genuine surprise to those who still think of China in terms of pagodas and sampans.

Nothing could better illustrate the attitude of modern China toward mechanical appliances and progress in general than the up to date manner in which aviation is being handled by our Oriental friends. Through its participation in the peace conference China was enabled to become a signatory to the International Air Convention, and thus it has ratified, promulgating at the same time the legislation required for its enforcement. An aeronautical department was then created for the control of all air activities and various schools were established for the training of pilots, air mechanics, and area airplane managers. The latter personnel, together with the establishment of an 800-mile passenger and mail air route, between Peking and Shanghai, sufficiently shows the strides China is making in aeronautics.

While at present the main effort is brought to bear on advancing the men and machines America and Europe afford to aeronautical enterprises, China is likewise striving to create its own sources of aircraft supply together with the men required to take advantage of them. Thus, after a certain preparatory period, China expects to become rapidly self-sufficient in aviation material as well as in personnel.

That this program may take some time before it will be brought to its logical conclusion is obvious. In the mean time China's progressive attitude offers American aircraft manufacturers an excellent opportunity for making their products better known in the Far East, the more so as numerous Chinese involved their flying training in the United States.

French Air Power

IN view of the lengthy controversy which occurred in this country relative to the advisability of creating a unified air force and a separate air department, it is interesting to read of the efforts made in France along this line of thought. There is a strong movement on foot in the French Republic for bringing about the merger of the two fighting air forces into a single service which would be co-equal in administrative and strategical matters with the army and navy.

There were forced in problems of French national defense realize that France is more in danger of aerial attack than is generally realized by the public. The activities with which Alençon men, coupled with their ability of leading straight

for the absolute repetition of geographical obstacles, makes of the aerial war a striking form of the first magnitude. On the Old Continent, furthermore, the short distances relative to American conditions—which separate the various sections from one another, greatly enhance the chances of a successful attack from the air.

Now, since this is just the condition which prevails in Europe, it is quite natural that France should make strenuous efforts to prevent its being outdistanced in the command of the air at new fields. Men well known in aeronautics, such as André Michelin, Count de la Vaulx, Captain Fock, now a deputy in parliament, and others are bearing French effort in an attempt to arouse interest in the cause of aviation among the people.

The same plea for a ministry of defense which is being discussed in this country is under consideration in France. The military and naval establishments are opposing any such organization for the usual reason, just as they are hostile to any amalgamation of the military and naval air forces. It would nevertheless seem that a ministry of defense, with under-secretaries in charge of army, navy and air forces, will eventually be found in all countries to be the best solution of the problem of national defense. That many governments will have to be overcome before such a solution is adopted seems equally evident.

Please talk about the aerial war protesting the mouth, the soldiers and the navy is refreshing. It is not too much to expect that France which has always led in aeronautical development may once more show the way by organizing its air force so well that it may be a model for other countries.

Airplanes and Kings

NOTHING perhaps could better illustrate the manner in which the airplane has become an every day vehicle—which means a safe machine, after all—than the many instances where royalty have taken to the air.

King Albert of Belgium, after having been a passenger on board and a leader of his people through adversity, was also the rapid pioneer in flying. His trips by airplane from Brussels to Paris and to London are so frequent as to excite little comment among his people.

The King of Spain, who is also a great sportsman, likewise uses airplanes in his numerous trips. It remained for Charles, co-emperor of Austria, to put the airplane to a new use—that of starting a rebellion in his behalf by flying into the country which he hopes to rule. If as it seems, the Allies are going to thwart Charles' Hungarian ambitions by interfering him in a safe place, perhaps they will see to it that police airplanes shall prevent a reversal of his aerial exploit.



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Lessons of the Gordon Bennett Balloon Race

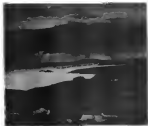
By Ralph Upson

Pilot of Balloon "Aero Club of America"

Even in these enlightened days, one sometimes hears the question "What is the use of the free-balloon?" To this I feel like answering "It is the use of golf, yachting, poetry, tennis, polar exploration, 'relativity' and a host of other amusements from the whole world of sport, art and scientific endeavor." Ballooning does not claim to be any more than these, but it is the most satisfying combination of the three that has ever been invented by man.

My object here is simply to point out various specific results which have accrued from the International Gordon Bennett Balloon Race past conducted from Brussels.

Meteorology. At least three meteorologists took actual part in the race, and unprecedented attention was given it by the weather bureau of the various countries. The ballooning



COURSE OF BALLOON "AERO CLUB OF AMERICA" JUST BEFORE LEAVING AT PORT MARNE IN WEST AMERICA. COURSE FOLLOWS BUREAU OF BALLOON

faster in the weather at the time of the race was a pronounced "high" which caused strong surface winds from the east decreasing at upper levels, with only a slight shifting of direction.

Now these "anti-cyclonic" conditions happen to be the most unfavorable in many ways of all the ordinary formations. Competent meteorologists still differ among themselves as to the inside nature and workings of a "high," and discussion of what it will do are extremely uncertain. This is usually due to incomplete knowledge, and there is no better way of adding to this knowledge than by studying the situation at absolutely first hand in our own, in a free balloon.

Multiplying this opportunity by Europe, the number of balloons in the race, all making independent observations and the total value of the race may be readily appreciated.

The meteorological results from a worldwide standpoint have yet been made public, but it is fairly clear that they will include interesting light on the following subjects:

- Relative of wind currents in a typical high.
- The extent to which these currents can be regular or irregular in nature.
- Effect of clouds, bodies of water, etc.
- Nature of conditions in a calm area, where the barometric gradient is practically zero.
- Dynamics of the wind. How a given air mass may be

unaffected from one system to another, and the changes that it undergoes.

Instrumentation. The free balloon is a wonderful medium for the development of refined instruments and methods of observation. This is because it provides such a steady wind-free platform, where the essential principle of a new device may be accurately judged without all the complications of design which would later be required for practical use in power-driven aircraft.

Around our own equipment we had several new instruments which together almost revolutionized the navigation and control of a free balloon. The car which was so much more readily available for general aeronautical use was an instrument which we called the "fader," although more suitably it should be called a *forecaster*.

This instrument measured directly and continuously the amount of subsidence force acting on the balloon at any



WINDMAP OF WESTERN EUROPE ON THE EVENING OF SEPTEMBER 16, 1923, THE SECOND DAY OF THE RACE

given moment. In all the other types of instruments for a similar purpose it was necessary to wait for some obvious movement of the balloon before the force which caused it could be even approximately estimated. With the "fader" however the amount of the force was known before waiting for its unaided effect on the balloon. It could be measured at once with balloons or gas, or it showed its variations could be varied with full confidence that the balloon could not get out of control.

The "fader," in somewhat modified form, will be a great improvement on the outcrops for all types of lighter-than-air craft, and should be a valuable aid also in the control of airplanes. Full details of this instrument will be published at a later date.

An improved type of "navigator" made by the Fessenden Instrument Co. enabled us to plot our course with great accuracy. This instrument combined the functions of compass, speedometer, anemometer, tachometer, and range finder (distance piece).

In the scoring of data on wind movement we were greatly helped by the T. H. Hatcher Co. for the use of the best rapid pilot balloons which we have yet tested. For the first time we were able to use an expensive pilot balloon successfully, which permitted a continuous observation of conditions at different altitudes.

Performance. The circumstances surrounding the start of the race are of considerable interest in their relation to possible try-outs. On Sept. 15, the day of the start, the wind attained approximately 40 m.p.h. in force. During the whole day, not a single airplane passed between England and the continent. Only one ventured to ascend at all and had to land again before crossing the channel. According to some French records, it was the first time since March that there had been such a total cessation of flying. Yet fourteen big balloons, entirely without powerplant, were inflated in the open and out of without serious mishap. Such a performance could help but argue well for the practical future of all lighter-than-air craft.

Almost equally to be noted was the success with which the balloons were navigated, at first through strong but light winds, later in precisely a calm, and always with large loads of water in their baskets. It was probably the most perfect run that had ever been run, yet only one balloon was forced to descend in the water.

Of the three balloons which attempted the crossing of the Irish Sea, two were American; and the third American balloon.

would certainly have done so also if he had had the opportunity.

Future. Greatly. This race has shown up very clearly the various mistakes and hazards of the game. I put the item of mistakes first because most apparent elements of hazard or chance actually turn out to be errors of judgment of some kind. Thus J. Van Houten from St. Louis was leading the whole field, but ran out of balloon. "Blind luck" one may well say, but then he should not have been so extravagant of ballast. W. T. Van Orman from Akron was the leader of the balloons which took the southern route, but this was not the route which held the greatest possibilities. On my part I committed a little too much speed for direction even though I had with me one of the most competent meteorologists in the world.

But not at lack or judgment as you like, the fact remains that to be consistent winners we will have to be consistent starters. In other words quantity is something of a factor as well as quality. In particular the individual should have a full understanding of our country should always have a full team of three balloons in future international races.

Experiences in the Gordon Bennett Balloon Race

In connection with the above article the following account of the experience of the balloon "City of St. Louis," piloted by Edward Van Houten, with J. S. McKibben as co-pilot, is of interest.

The week preceding the balloon race the weather conditions were such as to make a flight into Europe an almost inevitable fact in order to ensure the safety of the contestants in the balloon race.

The publication of *Aeronautics* gave it to describe the 25 degree of altitude on a point which if passed would form the boundary for which credit for distance could be given the contestants. With conditions such as these all the contestants prepared themselves for a possible flight into the regions of nature's domain or of western Europe.

These weather conditions suddenly changed, however, with the day preceding the race. The wind was such as to make a flight for England and possibly Ireland probable.

The day of the race broke with strong surface winds, approximately 40 m.p.h. rapid on the ground, which made the following of the balloons an extremely difficult and even a precarious undertaking. And it not been for the direct foresight and remarkable organization of the Belgian Aero Club

in connection with the Military Forces, a postponement of the race would have been necessary.

By noon the balloons were ready to start, and waiting only the signal of the starting gun, they moved slowly along with the wind. Properly at a slack, the first balloon, representing England, left the ground with the cheer of thousands of people who were lining the road.

After consultation with C. G. Andrieu, the meteorologist of the American team, who as able to Ralph Upson of the balloon "Aero Club of America," furnished us with details of the meteorological conditions, Mr. McKibben and myself decided to try for a wind which would carry us over the coast of England and Wales across the Irish Sea and into Ireland.

At 6 o'clock prompt we left the ground directly upon an altitude of 1500 meters where we encountered a wind of 25 m.p.h. carrying us directly west north west. From time with the capacity of a fast system over the Irish Sea and into Ireland. At 8 o'clock prompt we left the ground directly upon an altitude of 1500 meters where we encountered a wind of 25 m.p.h. carrying us directly west north west. From time with the capacity of a fast system over the Irish Sea and into Ireland. At 8 o'clock prompt we left the ground directly upon an altitude of 1500 meters where we encountered a wind of 25 m.p.h. carrying us directly west north west. From time with the capacity of a fast system over the Irish Sea and into Ireland.



VIEW OF THE GORDON BENNETT BALLOON RACE AT BRUSSELS, SEPT. 16, 1923

Photo Colored & Enlarged

usually could we see the lights of a passing steamer, and the incessant flash of the lighthouse along the coast.

Two hours later we had reached the English coast and sailed smoothly but swiftly across the mouth of the Thames River into England. All night we drifted on over the kaleidoscopic fields of England, and at mid-night we saw the distant light of London to the south of us.

My early morning chase was in defiance across the Malvern Hills in winter. England and we knew that it could not be long before we should again strike soft water. Accordingly at 5 o'clock with the snow distant to the west of us, we dropped down into a sheltering valley—no snow, that our dogs, once headed the ground, and we ascended from some of the nearby men and women that we were 5 miles north east of Aberystwyth, which lies on the southern extremity of Cardigan Bay and the Irish Sea. Two minutes later and we had reached Cardigan Bay, and were making out to some more

At this time we had eighteen bags of bait, and were making at a rate of 25 bags. It was 180 miles to the Irish Coast during so we were in a west north westerly direction, so after a careful survey of weather conditions we decided we could reach the Irish Coast early in the afternoon, and drift to the western boundary to a victorious conclusion of the race.

At 4 o'clock in the afternoon we were within the sound of the Irish Gongs. We could hear the lap-lap of the waves upon the rocks, the crash of the winds of rain, the merriment of the gulls over the water, the barking of the seals, the distant sound which denoted land. At this time we were proceeding directly north, yet try as we might for a westerly wind, the waves were so high and the current so strong that we were made to move more toward the east. Our halibut line getting low—we had but four necks of cod left. We passed directly over a shoal and a Sigsbee and we knew that should we continue on our present course we would be in the jaws of the rocks. The men were such that if we landed in water we could be disappointed in the race, and another thing, that the land was but a few miles to the south of us, so we decided to turn back and follow the coast. We were now heading northward and directly off Dublin Bay we turned more westerly. Off the east of us we saw two islands yet to make the coast. We were now in the middle of the bay. We consulted a study of the charts we had with us we knew there were two

ships were passed a landing in water would be inevitable as
land lay 70 miles or more in the direction we were proceeding,
and at the rate we were traveling it meant take at least 10
hours or more to reach land.

At 5 o'clock in the afternoon we spent two minutes and in the balloons sank slowly toward the water. We dropped a Hydrex distress light overhead. One of the ships turned toward us and for the moment we thought we would be rescued, but the ship again turned away, and soon both steamers had disappeared down the coast.

Every effort was bent to stay in the air as long as we could. We pulled in our drag rope, a rope 200 ft. long, and weighing 500 lb. and then we cut up into coils lengths to use as ballast. Soon two of our remaining three bags of ballast were gone, and the drag rope also, and we decided to throw overboard all our disposable food, water, instruments and unnecessary clothing.

At 5 o'clock all our balloons were gone and we cut off all ropes on the basket which were not necessary to hold the basket to the balloons, and went down as before. Slowly, we floated ourselves descending into the sea when that fortress which had been so adverse, now favored us with a warm sea breeze which headed the gas and checked our fall, but this was only momentary.

At 22 o'clock we again began a slow descent, with all of the rest of us we saw a number of black ducks and two white geese and a pair. We knew this was our last chance for the night as we were already north of the stamping line lying between Duluth and Laverne. As the balloons slowly sank downward the birds rose higher and higher. Finally, at 23 o'clock, we were a few feet from the ground. Mr. McKibben was at this time standing on the basket and the two of us were burning candles for the shock as we should hit the water. We hit the water sooner than we expected and Mr. McKibben was thrown into the air and lay on the head by the load and there, with the rifle.

Released of 3 to 10% of its weight, the balloons shot upward at a terrific speed, and should its ascent not be checked it must rise to a height of 3 miles or more. I did the only thing that was left—pulled the rope cord which bore a complete panel one of the upper side of the balloons. I braced the crash of escaping gas and the split of the cloth in the under half of the balloons whipped up against the top. The balloons formed a parachute and descended into the water, no harder than if I had jumped from the top of a skyscraper.

Releasing myself from the wreckage I swam toward the boat and half an hour later the life boat from the ship which had turned out to be the steamship Thetis picked up St. McKibbin and myself and conveyed us to Nydalen Harbor, Ecuador. The harbor was lost and the last we saw of it was floating upon the water like a giant monster. Because of the danger from the unburned remaining gas we could not prevail upon the steamship to rescue it.

Air Mail Service to Hanoi, Marshall Post

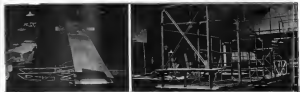
As a special mark of honor to Marshall Foch, who will be the guest, with other notables, of the American Legion at the third annual convention in Kansas City, Mo., from Oct. 31 to Nov. 2, Postmaster General Blye has arranged to have an Air Mail syndicate of six airplanes fly to Kansas City on each of the five days of the convention. The plan of this syndicate will be to represent the various cities from which the delegates will come—the transcontinental route—from New York to San Francisco—and will fly in formation from Omaha to Kansas City.

Air mail service has been authorized between Kansas City and Omaha for the duration of the American Legion Convention.

Meteorological Station at Carlstrom Field

The Signal Corps is establishing a meteorological station at Carlisle Field, and Sergeant John M. McCalland has been assigned to the station to take charge of the work. The various instruments and implements are already on hand and are being set up under Sergeant McCalland's direction. The station is located at the Old North Gate, and the guard house there is being used in connection with the work.

A New Zeppelin-Staaken Monoplane



LEFT: FIRST HAND WIND AND ENGINE BIRD OF THE NEW REPUBLIC-STAGAN COMMERCIAL 8-SEATER, EIGHTY-FOUR-
HOURS OF THE FORTNIGHT

The Staaken plant of the Zeppelin company has under construction a new type of all-metal monoplane designed by Dr. Börsch which is to be a two-engined commercial carrier. The construction of the machine generally follows the lines of the Model K 4 256 four-engined monoplane which was described in the Oct. 3, 1921 issue of *Aviation and Astronautics*, although it differs from the latter machine in several details.

Perhaps the most remarkable change is to be found in the engine nozzles. As may be seen in one of the accompanying illustrations, the engine nozzles project much further ahead of the leading edge of the wings, than in the Model E. It is this feature which, in the opinion of the writer, is the most valuable at present, inasmuch that this protruding engine nozzle serves the purpose of having the propeller disks overlap the nose of the machine so that the two thrust lines would be at a maximum distance from the longitudinal axis of the airplane. The smallest movements required for steering the airplane when flying on one engine would thus be kept within a small radius.

From the preliminary design on hand it is evident that Dr. Nebelhorn, in his latest design, has made a considerable—albeit apparently unsuccessful—effort to overcome some of the pronounced features of Model R-4256, chief of which were the two sets of vertical fins that would swing 16,700 and 30,000 degrees, respectively, and the two sets of vertical fins in the design data, the two-segmented Gyroflex-Blaender monoplane will have a twin Turbol-Load/Wright Knotty of 5150, and the landing speed will be 80 m.p.h. Of course, these figures are subject to confirmation by flight tests, but if the latter bear them out, the advocates of all-metal construction will have a very strong case to make. It is, of course, not the first or even not the first of metal airplanes to be advanced, but merely due to lack of experience with this type of construction.

While the frame structure of the new Zeppelin-Staaken does not seem to differ in principle from that of the three-engine model, the framework of the fuselage, which is also illustrated here, shows a considerable departure from previous practice. The floor structure is made of welded steel and is based on the Model E 4306 in order to provide for a clear passage throughout the length of the fuselage, have been strengthened in the twin-engine model by a more orthodox construction. The fuselage is built up of channel and corner sections in longitudinal and cross members which are riveted together and reinforced in the bays which occur outside of the open spaces reserved for the cabin.

That this system of construction is responsible for a considerable saving in weight is obvious. Now the strength of the fittings will compare with that of the four-angled model known to engineers since nothing is known as to how the four-

lage will be known to carry the wings, not how the portion containing the caterpillar will be affected.

Type	HS 40-14
Overall length	44 in.
Maximum height	11 in.
Weight	55-577 lb. empty
Weight empty	515 lb.
Weight loaded	550 lb.
High speed (1 rev/min)	4000 r.p.m. (maximum)
High speed (1 engine)	1000 r.p.m. (designated)
Operating speed	800 r.p.m. (designated)
Power	400 hp

WITH TECHNICAL MODEL OF THE NEW TWIST-LOCKED EXPANSION-
SCAFFOLD MONORAIL

The general appearance of the new Zeppelin-Stokes monoplane may be gathered from the wire-tunnel model illustrated above.

R.30 Memorial Fund

The Council of the Royal Aeronautical Society has decided to establish a memorial fund to those lost in R.26 and previous stripships. With the income derived from the capital sum raised it is proposed to encourage investigations into problems connected with stripships or allied subjects; the results of such work to be embodied in papers to be read before the Royal Aeronautical Society. It has been decided that the memorial fund shall take this form as it is believed that this offers the best means of carrying out the work of those who have fallen.

Contributions should be forwarded to The Secretary, Royal Astronomical Society, 7, Albermarle Street, London, W. 1, England.

Promoting a Municipal Field

By Ralph B. Eckley

Commercial flying fields are such a new element in the business enterprise of American cities that deficits and third methods in their organization are little known.

Large cities find it quite easy to find the fifteen or twenty thousand dollars needed to properly establish a field. They can secure grants from the city treasury and from the government and rather large donations from prominent business men. In the smaller cities, however, upon which commercial aviation would largely depend for its material for its business, there is a much different problem.

A number of towns from two to forty thousand in population established fields shortly after the war and found it most difficult to maintain the fields necessary. As the present flying program is almost at a standstill in the establishing of fields in the smaller towns due to the money situation.

For the benefit of the new state and city officials of the smaller towns, the following account shows how one town successfully established a field under very adverse circumstances.

Monmouth, Ill., is a small town, in western Illinois about sixteen miles from the Mississippi river and about twenty miles south of Rock Island. It has a population of about eight thousand and is located in a rich farming district and hence, widely as a school and college town. The population is made up largely of mechanics and retired farmers, with a few hundred factory men.

The proposition of a landing field was first proposed last July before the Boarding Committee by George McManis, city clerk. Mr. McManis proposed to lease a field and establish a school. Interest was aroused among the younger set of the organization and steps taken to begin the organization at once. The students of the McManis school, a despatcher of the work at a week or so but the several came when the Curtiss Iowa Corp., learning of the interest in a field, proposed to establish a subsidiary field, install a Curtiss Oriole and training plane, have double hangars and provide service on the condition that a field was secured and fifteen thousand dollars raised.

A committee was named from the Exchange Club in cooperation with the Rotary Club and the Chamber of Commerce in raising the money.

Commercial Aviation in France

During the course of an interview with a correspondent of the London Morning Post, M. Laurens Krieger, the French air minister, remarked that commercial aviation in France, especially commercial aviation, has been most profitable lately. There are already reported as regular service lines for the carrying of goods and passengers and, so far as air transport is concerned, it is all either under way or in the air. In May, said a new aerial line, Paris to Amsterdam, will be inaugurated.

Amsterdam is especially anxious on account of the coming of the "Elysée" route. Thus, it takes only one hour to go from Paris to London by train and boat, but by taking the aerial mail one can be in England about four hours after leaving left the hotel. By air, Brussels is only two hours from Paris, half from Paris, and Germany only three hours and a half. Prague is seven hours from Paris, and one can reach Morocco after a thirteen-hour flight, while the most rapid stage takes four days. Railways take ten hours to go from Lyons to Sicily, a route that makes the same journey in two hours, but a night train makes the two towns in 55 minutes.

Another factor of paramount importance in the future development of aeromail is that of security. This needs already obtained adequately guarantee the security of passengers. During the year 1915-1920 1,180,000 miles have been covered by the flight of French aeromail, with only one fatality, with only seven killed and seven wounded, that is to say, an average

The campaign opened with a big dinner for the workers. The Curtiss-Iowa Corp. sent representatives from Paris Dodge to the meeting in two planes, an Ansaldo six-seater, and an Oriole. The Mayor of Monmouth came from Fairfield, Iowa, another subsidiary field and arrived in time for the dinner. Great interest was shown in the two machines, both of which were new to Monmouth people. The success of the campaign was due to a great extent to the use of these modern machines.

The campaign opened with a crash and continued steadily for a couple of weeks until one night the Oriole made a forced landing and broke the undercarriage. Two incidents were mentioned by the fact that at noon the next day an Ansaldo duplicate arrived from Fort Dodge from the Curtiss-Iowa Corp.

A great deal of effort was necessary to overcome the unfortunate publicity in Chicago papers with regard to a number of accidents in the air that occurred during the campaign. The local papers were somewhat apprehensive of the same work, publishing daily reports of progress, and making special articles in regard to commercial aviation.

Interest in the service courses of the Air Service and as attempt by Monmouth to secure a civilian in cooperation with a neighboring town added interest in the minds of the younger men, many of whom served in the air force during the war.

The campaign was brought to a close on Oct. 12 after a campaign of about a month. Monmouth was awarded a permanent field, equipped to supply gas and oil to landing planes and with a supply of repair parts for motorcycles.

Passenger carrying is to be the main business of the company, who expect to start work on the substantial double hangar at once. A training plane with an expert pilot will be available at all times for school purposes together with an Oriole for passenger work.

Monmouth is one of the two towns between Chicago and Omaha on the Burlington route, which connects the two towns. There are 150 miles between Monmouth and Chicago and would be glad to have all aviation on a western long trip at her field, which is just north of the town and the north about a mile of the college campus. Repairs and service will be available at all times.

of one killed and six wounded per 105,000 miles flown. Consequently it is not surprising to realize the considerable development of aerial transport in France. The transport of passengers has greatly developed. Only 900 persons traveled by air in 1915, the number of passengers amounted in 1920 to 1,180,000. The number of passengers transported in 1920 was 17,600. It was carried by machines in 1915, while the last commercial transport amounted in 1920 to 222,330.8. The last figure includes a great many persons sent from Paris in military aircraft. The French government has been very anxious to plan extensively in making their deliveries. The value of their arrangements on the line Paris-London during the year 1920 exceeded 16 million francs, and this figure will be largely surpassed this year.

Curtiss Eastern Airplane Corp.

The Curtiss Eastern Airplane Corp., distribution for Curtiss airplanes and motors for the eastern part of New Jersey and the States of Pennsylvania, Maryland and Delaware, has taken over the Curtiss Flying Section at the Hotel in Atlantic City, N. J.

The Curtiss Eastern Airplane Corp. will be kept open all year round for passenger carrying, aerial photography and sports purposes. They will also keep a large stock of spare parts and will have a repair shop. The work such as repairs and overhauling that will be necessary.

Aviation in China

By Major Ben Chen, C. A. S.

The history of aviation in China commenced in 1909, when a Russian pilot made the first historical addition in the Chinese capital, Peking, with a British monoplane at the Legation Quarter. As it was the first airplane ever flown in China an unusually large throng was attracted from great distances. The enthusiasm and importance of aviation was well realized by the Chinese government, and in the same year the general staff of the Chinese army in Peking selected a place about ten miles from the city known as Nan Tzu for establishing an experimental flying field. As aviation in all other scientific undertakings, little service was obtained in the beginning on account of the lack of skilled technical persons. Just one year later, a French aviator, Mr. Yvelin, came with a biplane higher in Peking. His wonderful skill and daring feats attracted nation-wide attention, but in attempting to surprise his curious Oriental spectators with an act of heroism in the air, he was unfortunately killed by accident. This would undoubtedly de-

stroyed, and the numerous skill men, many interruptions were caused in the school and consequently, for the first six months, only a few of the students were actually graduated as qualified pilots.

Following the example of the army, the Chinese naval board began to turn its attention to naval aviation as early as 1908 with the establishment of a naval flying school at the seaside vicinity of the Foochow navy yard. Unlike the air service flying school at Nan Tzu, it was entirely under the management of Chinese instructors, and among the latter several were naval aviators, who assumed their naval and flying training in the American intervention and private flying schools. Several airplanes, equipped with American made engines, were constructed and were used solely for non-military purposes. In the last two years the activities of the school were frequently interrupted on account of financial difficulties, and also by lack of supplies caused by the Great War. It was recently reported that the Chinese naval board has



COMMERCIAL VIET AIRPLANE, USED BY THE CHINESE AERONAUTICAL DEPARTMENT, AT NAN TZU AIRPORT, PEKING

sent every effort to reorganize the school and several young capable Chinese pilots have already been ordered by the government to report there as instructors.

In the winter of 1912, the Chinese made its debut in China with the representation of an aeronautical department for the purpose of controlling and utilizing the status air service of the country. Since airplanes could not be manufactured in China with such stations, contracts were signed with the Hestley Page and Vickers companies by which the Chinese government agreed to purchase from the two firms 350 airplanes during the next five years, and further agreed to supply for the time being a staff of foreign experts as pilots and instructors. It was also agreed upon between the Chinese and British governments that these airplanes shall be used for no other purposes than for training and commerce, their military usage being in particular forbidden. In case the arrival of these machines (airplanes) were recommended by the British was necessary to assist the Chinese government.

The first airplane to arrive in China was a biplane, which was named "The Great Wall." It was a very small airplane, but it was the first of its kind to be used in China. It was used for training and commerce, and it was very popular with the Chinese people. It was also used for military purposes, and it was very successful in its operations.

In 1913 the first aviation school in China was established at Nan Tzu, now known as the Air Service Flying School, under the auspices of the general staff with the assistance of some French aviators. Twelve Curtiss biplanes were purchased in France by the Chinese government for instructional purposes, and a factory well equipped with modern machinery which was mostly imported from Europe and America, was also established to be used for repairing aircraft. The school was managed by a carefully selected staff of Chinese and French instructors with the assistance of several French aeronautical engineers. The first models were supplied from France; the young officers of the army and navy. On account of the repeated internal disturbances, both politically and

several every effort to reorganize the school and several young capable Chinese pilots have already been ordered by the government to report there as instructors.

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American Trained Chinese Pilots

Ever since 1909, young Chinese aviators have been returning to Canton by the sea from the United States, where they obtained their flying experience. They proved their skill and ability as qualified pilots in several military air trials before different military leaders in banking as well as racing and

reconstruction, and gained the confidence of the people as to the practicability of aviation both in military and commercial operations. Great enthusiasm has been shown by the more progressive people of South China toward aviation. Regular air operations have been organized for training and military operations under capable and experienced young Chinese pilots. In spite of the lack of material and other necessities, and of deficiencies, aviation is making a remarkable advancement in Canton, perhaps surpassing all aviation enterprises in China.

Further aviation interest was aroused in aviation by the enormous visit of the two Italian aviators, Lieutenant Massimo and Ferrero, in May 1930, who left Rome on Feb. 16 and landed at Peking on May 17, covering a distance of nearly 33,000 miles. They were highly honored with several magnificent banquets by the Chinese Government and were also well entertained by many high local officials including the President and his cabinet. After remaining in Peking for one week, they departed for Shanghai and continued their Rome-Tokyo flight. To expose the cause of emergency aviation in China the Italian government presented an airplane to the Chinese government. This machine is now exhibited in the National Museum of Peking. These daring aviators with their wonderful success and courageous adventuring most undeniably made a deep and lasting impression on their Chinese friends.

As that time, aviation in North China was more or less under the hands of foreigners. Upon the war suspension of the officers of the aeronautical department, a call was sent out in all the Chinese diplomatic representations for all Chinese students studying abroad to return to their native land and aviation. Many students, both those and engineers, promptly answered the call and eagerly returned home to render their services to their country. In the meantime, several young officers sent out to Russia, Italy, and the United States by the naval board returned home fulfilling themselves as pilots. Being a great need of more trained aviators, the aeronautical department recently sent several more young officers to the United States for aviation training. With the few foreign trained pilots it is hoped that China will soon manage her own aviation completely and efficiently.

Peking-Shanghai Air Line

Aviation is making great progress in China, particularly in the past few months both in the North and the South. Several air lines have been inaugurated with unusual success. The first airline was the Peking-Shanghai air line, covering a distance of 500 miles. It is a regular service, with a regular station at a feasible airport in China because of her scattered railroad system and the lack of modern transportation. It is generally believed that the development of the aviation of communications and the aeronautical department is in the carrying of mails and valuable parcels by the latter department. Commercial Vickers "Vanguard" are used in flying this different air line, with a capacity of carrying 12 passengers. The minimum rate charged per ticket is 15 cents, and passengers are carried at the rate of approximately 25 cents per mile. With such light payments, it is possible that China will soon be carrying her mail by air. The direction, whereby her four hundred millions of inhabitants would become directly connected together, as never had been before.

The air service flying school at Nan Yuen, which is directly under the control of the aeronautical department, will be depended upon to supply the future aviators of China. Aeronauts will take lessons very extensively and for instruction. The students of aviation in Canton are fifty, half of which are in the observer class, while the other half are receiving instruction in flying daily with the exception of Sundays and Sundays. The daily amounts of well treated Chinese, English, American, French, and Russian aviators are increasing rapidly to produce a large number of capable and experienced aviators in the aviation world. Beside their training in the flying field, the students attend classes, in which they receive courses in mathematics, foreign languages, physics, chemistry, geography, wireless, and other subjects which are essential to all aviators. The students are carefully examined quarterly by

Prior to the inauguration of the air line between Peking and Shanghai, the aeronautical department has established a school for air service aviators, which aviators are the purpose of providing competent administrators for the department to handle the new business. The first class, comprising thirty students, was mostly chosen from members of the staff of the department. The courses of study gave them the necessary and elementary knowledge in air service administration, and the term is only for three months. Upon the completion of their courses, they will be sent to take charge of the different stations. At the same time, the technical service of the aeronautical department has been authorized to establish a class for the training of a large number of technical workers.

Seventy-five students are under instruction and those, after passing thorough examination and having fulfilled the requirements, will be detailed to the different stations for duty. Beside performing the work as a flying school, the air service flying school of Nan Yuen is conducting an aerial towing service every Tuesday, Thursday and Saturday between Nan Yuen and Peking, a distance of about eleven miles. The planes in use are the Viceroy Commercial type and three types are made during each hour. It was a great surprise to find among the passengers many distinguished officials as well as many prominent ladies. The object of this aerial towing service is not for the sake of financial accomplishment, but the real underlying purpose is to arouse the people's interest and to demonstrate to the public, aviation is an enterprise in every way and dangerous than riding in an automobile in a crowded street, and that aviation will not be thought of as a mysterious affair. Most recently a general in Peking was accompanied by over half dozen of his officers, and one time in Chinese history for airplanes to participate in such a ceremony.

No one could deny the fact that China owes a debt of gratitude to France, England, and the United States for the faithful and friendly assistance these countries rendered in the development of her aviation. There is sufficient evidence to show that the Chinese can have the art of flying with confidence and safety and can do so with ease and speed, and before China will produce many efficient and safe aviators.

All of the airplanes used in the North of China are of English manufacture. The Vickers company alone has supplied China with 100 Aero's and about forty commercial Viceroy's. The airplanes used down in Canton are mostly of American manufacture, with the exception of a few European machines. The Chinese government is now bending every effort toward the establishment of an up-to-date aircraft factory, capable of producing a large number of light and heavy airplanes within a short space, if necessary. It has been found that all parts of an airplane could be locally manufactured in China with the exception of the engine, in the aspect of the lack of proper metal supplies and modern machinery.

China Signes Air Convention

As one of the signatory powers, China joined the air conference held in London, during the peace conference, with her members in England as the representative. Regulations in regard to air navigation have been drawn up by the aeronautical department with the approval of the President. All the regulations are strictly enforced, and the violation will be duly punished by law. As an instance, if one flies over Peking at an altitude below 3,000 ft., one may be fined upon by the city police.

Beside the airplanes owned by the government, there are a few others under private ownership down in Canton. However, they are subject to be called into permanent service in case of need. Their owners also give instruction in flying and navigation is also commonly given to persons who desire to learn the art of flying. A few days ago, it was announced that through the generosity and kindness of the American Flying Club, the Chinese Flying Club, which was presented to the Chinese government. The machine will be transported to Nan Yuen to be used in the air service flying school for the instruction of its flying students. With the help of the American Flying Club, the Chinese Flying Club, the Aero Club of China was recently organized under the leadership of many prominent officials.

A French Surgery Airplane

By George F. Paul



THE VARIOUS STAGES AIRPLANE "AEROCAR" AND ITS EQUIPMENT

A Valon machine especially equipped with original apparatus for rapid field work has been developed by a French inventor, R. Mureaux of Paris, who has called the machine thus equipped the "Aerocar". The war awakened the great necessity of getting urgent aid to distant and isolated spots at the earliest possible moment. Many trial flights have been made with the "Aerocar", with a view to determining the possibilities of development in this line of first aid. The machine is capable of carrying, in addition to the pilot, a surgeon and a radiologist, who can mount the surgeon, besides it carries in special receptacles all of the apparatus and equipment needed for emergency surgical work in the field.

The machine can furnish the current for the X-ray work. The operating unit can be run in the same manner as from a direct battery. The X-ray light is light, being made of aluminum, and can be folded up.

The plan of the inventor is to have one or more of these machines at important stations within a given zone from which they can cover their districts. They will machine can bring guns, compressors, cotton bandages, etc., as well as other special cases such as soap, ether, serum, or vaccine, in addition to the medical instruments, all properly stocked and ready for use. A supply of sterilized water, varying in quantity according to the use of the receptacles, carried, can also be furnished.

The working model comprises such materials as a folding machine, an operating table, two small round table stands, two circular basins for circulating the apparatus, a large box for oil, two small basins, an instantaneous hot water heater, etc. On reaching the scene of the emergency the machine, with the assistance of his helper and the pilot, will soon be thoroughly prepared to perform any operation that may be

required. With this equipment it will be possible for operations to be performed quickly, relieving the patient of protracted suffering and greatly increasing the possibilities of recovery.

It is pointed out that persons who have not with injuries either in battle, industrial accidents, railroad wrecks, or other cases, must be removed to a hospital or a central hospital as soon as possible. A doctor there may make the most successful operation. In such an emergency the aircraft that can bring the equipment of the operating room direct to the patient will prove of the greatest practical value and will perform a mission worthy of the name of modern aviation.

Mureaux Testing with U.S.S. Iowa

The old battleship Iowa will be taken south for emergency exercises during the winter months with the Atlantic and probably the Pacific Fleet, in Panama Bay between Feb. 27 and March 6. She will proceed south with the Atlantic Fleet early in January, either under her own steam or be towed by an auxiliary vessel.

Arriving at Panama Bay she will be subjected for radio control and during the week end made for the special primary tests, it is understood that she will again be subjected to actual attacks from the aircraft of the Atlantic Air Squadron, which is now in the fleet. Whether or not the Iowa will be used on this radio controlled warfare, the only one in existence, is not yet determined as the detailed plans for the primary exercises have not yet been announced by Admiral Gray Jones, Commanding Officer of the Atlantic Fleet.

Kokomo Flying Meet

A general feeling of optimism with regard to the future of aviation in this country prevailed at the flying meet and in Kokomo, Indiana, Sept. 22 to 24, by the Curtiss Indian Co. More than fifty airplanes of various types were in the field, among them being a *Kokomo D-5*, a *Foster White Biplane*, a *Waco* *Waco*, *Waco*, *Waco*, etc.

E. A. Johnson and J. J. Mac Kay their *YEB* to the meet from their home field in Dayton. The ship was used during the war for bombing. It has a *Downing* engine, a four-bladed propeller, a nacelle with canopy for four passengers, and is capable of being great in use and making long trips.

Mr. Johnson expressed confidence over the season's business, stating that the firm has been selling ships and making money. He believes that there is a great future ahead in this and that next summer will do much to develop aviation. Mr. Mac Kay was quoted as saying that it is the speed of airplanes that is going to build up the business. At least, five more' travel from Kokomo to Chicago by train, and the distance can be flown in one hour and 15 minutes. And in what the people of this country want.

Back to cover and E. M. Lard, in the meet from Wichita, Kansas, in their "Lard Swallow". Mr. Lard stated that his factory is making full time, business being good and plenty of ships being sold. The general depression, one learns about so much does not seem to have affected his business. According to Buck Weaver, "the people in the West are crying for faster travel. They want the train schedules torn apart and they are going to have it. They will pay gladly if they can save time."

Tampa's New Aviation Field

Benjamin Park Aviation Field, Tampa, Fla., was officially opened on Sept. 19 and the event was marked by an interesting program of entertainment. A considerable part of the personnel from Carlisle Field, including Major Royce, Commanding Officer, and Lt. Col. Wm. E. Gilmore, Chief of the Supply Group, Office Chief of Air Service, were in attendance.

Major Royce and Colonel Gilmore were the first to land on the new field, and shortly afterwards six other pilots made their appearance and one by one glided down to the field. When the pilot, passengers and audience at the seven planes had landed they were escorted by automobile out to Tampa Terminal, where a reception committee, headed by St. C. Fowler, took the aviators and city officials in charge. A drive into part of the Tampa Terminal area was followed by an informal dinner on the edge of the Hillsborough river. Following the dinner, Lt. P. D. Barker, Secretary of the Board of Trade, an aviator, introduced Major Royce, who welcomed the Carlisle aviators and paid a tribute to the past aviation in playing and will play in the development of the country. Major Royce then responded on behalf of the flyers.

George W. Benjamin, donor of Benjamin Park, then expressed his gratification at the opportunity of seeing the progressive aviation which Tampa is achieving.

Next, Colonel Gilmore made a short talk, in which he told of the progress of aviation. "The government spent \$13,000,000 for aviation purposes last year," he said. "This year our appropriation has been cut down to \$7,000,000. Of this amount, \$1,000,000 will be spent for developing purposes alone."

Municipal Flying Field for Honolulu

There is a possibility that Honolulu may have a municipal flying field in the near future of arrangements can be effected whereby Honolulu Park may be extended to include an area 600 ft. long and about 200 ft. wide.

Mr. Geo. Wm. P. Hammond, Department Commander, who with Brig. Gen. Joseph E. Kuhn made an inspection of possible landing fields in the vicinity of Hilo, stated that with the extension of Honolulu Park to include an area, the necessary preparation of the ground a hangar would be erected on the field and a detachment of soldiers now assigned for duty there.

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